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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/816,346	03/26/2001	Laurent Desclos	A7831	6357

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WASHINGTON, DC 20037-3213

EXAMINER

NGUYEN, DUÇ M

ART UNIT	PAPER NUMBER
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2685

DATE MAILED: 01/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/816,346	<b>Applicant(s)</b> DESCLOS, LAURENT	
	<b>Examiner</b> Duc M. Nguyen	<b>Art Unit</b> 2685	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 July 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 24-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 24-29, 31-37 and 39 is/are rejected.
- 7) ☒ Claim(s) 30 and 38 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This action is in response to applicant's response filed on 7/15/04. Claims 24-39 are now pending in the present application. **This action is made final.**

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims **26-27, 34-35** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains new subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As to claims 24, 32, the claims recite the limitation of "said by-pass switch comprises an active load for providing a variable load on said mixing means (or mixer circuit)", this limitation was **never** described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification only describes a by-pass switch including a FET (see paragraph [0037]), which does not necessarily **inherently** comprises an active load for providing a variable load (based on the Applicant's argument in the response filed on 7/15/04 regarding the variable load of the FET). Further, it

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appears that there is no correlation between the load of the by-pass switch and the mixer as shown in Fig. 20 of the specification.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims **32-33** are rejected under 35 U.S.C. 102(b) as being anticipated by **Harris, Jr. et al (US 4,829,204)**.

Regarding claim **32**, **Harris** discloses a mixer circuit comprising :

- A mixer circuit for mixing first input f1 and second input f2 to produce a sum and different frequency output signal (see Fig. 3 and Abstract), wherein it is clear that the mixer would inherently produce a sum and different frequency output signal as claimed;
- a variable impedance (load) comprising a FET (see Figs. 3-5, Abstract and col. 4, line 38 – col. 6, line 23), wherein since the FET is a transistor which is an active element, it is clear that the FET would act as an active variable load (or impedance) as claimed.

Regarding claim **33**, **Harris** discloses a MOSFET as claimed (see col. 5, lines 11-16).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims **24-25, 32-33** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kennan** (US 5,649,312).

Regarding claim **24**, **Kennan** discloses a mixer circuit comprising :

- mixing means for mixing first input  $f_1$  and second input  $f_2$  to produce a sum and different frequency output signal (see Fig. 4 and col. 1, lines 52-56), wherein it is clear that the mixer would produce a mixing means as claimed (see col. 2, lines 62-65);
- an active load comprising a FET (see Fig. 4 and col. 1, lines 52-56), wherein it is clear that such active load would comprise a FET similar to the FET 60 of Fig. 2 (see col. 3, lines 29-34).

Here, although **Kennan** is silent on the variable load, it is noted that the FET is a transistor device which has a variable impedance in accordance with the voltage-current characteristic curve of the FET, which would obviously act as a variable load for the mixer depending on the bias voltage supplied to the FET. Therefore, the claimed limitations are made obvious by **Kennan** for providing a mixer as claimed, for providing a stable mixer bias voltage.

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Regarding claim **25**, the claim is rejected for the same reason as set forth in claim 24 above. In addition, it would have been obvious to one skill in the art to use a MOSFET for the transistor as claimed, for utilizing advantages of MOSFET such as cost.

Regarding claim **32**, the claim is rejected for the same reason as set forth in claim 24 above.

Regarding claim **33**, the claim is rejected for the same reason as set forth in claim 25 above.

5. Claims **28**, **36** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Broderick** (US 5,170,500) in view of **Tanji** (US 6,198,352) and **Kennan**.

Regarding claim **28**, **Broderick** discloses a transceiver comprising

- a first amplifier (see Fig. 2, ref. 21);
- a first mixer (see Fig. 2, ref. 22), wherein it is clear that the mixer would inherently produce sum and difference frequency signals as claimed;
- a first IF amplifier (see Fig. 2, ref. 24).

Here, although **Broderick** is silence on an input matching and an output matching for the amplifier, it is noted that such matching impedances for the amplifier is well known in the art as disclosed by **Tanji** (see col. 2, lines 1-15), for stability purpose due to impedance matching. Further, although **Broderick** is silence on an active load for the mixer, it is noted that using such active load is known in the art as disclosed by **Kennan** (see Fig. 4 and col. 1, lines 52-56), for providing a stable mixer bias voltage. Therefore, it would have been obvious to

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one skill in the art at the time the invention was made to incorporate the above teachings of Tanji and Kennan to Broderick, for providing active matching as claimed in order to prevent instability caused by impedance mismatch, and for providing an active (variable) load as claimed, for stabilizing mixer bias voltage, to improve the performance of the transceiver.

Regarding claim **36**, the claim is rejected for the same reason as set forth in claim 28 above.

6. Claims **29, 31, 37, 39** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Broderick** in view of **Tanji** and **Kennan** and further in view of **Yamaguchi** et al (5,930,695).

Regarding claim **31**, **Broderick** as modified would disclose all the claimed limitations, see claim 28 above, except for a limiter. However, **Yamaguch** discloses a receiver which comprises several stage limiters prior to mixer for preventing saturation of the mixer (see Fig. 7, col. 4, line 39 – col. 5, line 14), whereas it is clear that the limiter would obviously comprise active load means for providing a variable load (see transistors in Fig. 11 and col. 5, line 56 – col. 6, line 48) as claimed in order to limit output voltage according to the curve as shown in Fig. 12. Therefore, it would have been obvious to one skill in the art at the time the invention was made to incorporate the above teaching of Yamaguchi to Tanji, Kennan and Broderick, for providing limiters prior to mixer for preventing saturation of the mixer, thereby improving the performance of the transceiver.

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Regarding claim **29**, the claim is rejected for the same reason as set forth in claim 31 above. In addition, since **Broderick** discloses a transceiver, and since the transmitter of the transceiver can be implemented as a reverse process of the receiver (which comprises a second IF amplifier, a second amplifier, a second limiter and a second mixer), it would have been obvious to one skill in the art at the time the invention was made to further modify the above teachings of Yamaguchi, Tanji, Kennan and Broderick, for providing a transceiver with a transmitter as claimed, so that the fabrication of the transmitter and receiver of a transceiver can be simplified due to their symmetrical or common components of the transmitter and the receiver, for cost reduction.

-Regarding claim **37**, the claim is rejected for the same reason as set forth in claim 29 above.

Regarding claim **39**, the claim is rejected for the same reason as set forth in claim 31 above.

#### **Allowable Subject Matter**

7. Claims 30, 38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

As to claims 30, 38, the cited prior art fails to disclose or make it obvious a transceiver which comprises components as specified in the claim, and whereas



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the reference signal inputting to the first and second mixers is outputted from a buffer amplifier and a doubler with a bypass switch as specified in the claim.

### ***Response to Arguments***

9. Applicant's arguments filed 7/15/04 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., active variable **inductor**) are not recited in the rejected claim(s).

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In this case, since the claims only recite an active load, any load comprising active elements would read on an active load as claimed.

As to Applicant's argument regarding the variable load of the FET, it is noted that the FET is a transistor device which has a variable impedance in accordance with the voltage-current characteristic curve of the FET, this voltage-current characteristic curve of FETs, or MOSFETs or any n-p-n transistors is well known in the art and described in most text books or literatures related to transistor devices. For instance, this voltage-current characteristic curve of the FET can be seen in Fig. 4 of the US **4,829,204** issued to **Harris, Jr et al**, which is also used in the rejection of newly added claims 32-33. In addition, it is well known that the voltage-current characteristic curve of the FET also varies on the

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temperature condition. Therefore, in the knowledge of one of ordinary skill in the art of transistor, the load impedance of a FET is not a constant, and would vary in accordance with bias voltage supply or temperature changes. Hence, the FET is widely used as a variable resistance due to its variation impedance characteristic. Therefore, the FET as described in Kennan's reference (US 5,649,312) would obviously, if not inherently, act as a variable load for the mixer depending on bias voltages supplied to the FET (see Kennan, col. 3, line 45 – col. 4, line 5 regarding the variations of voltage or current). Therefore, the examiner believe that the claimed limitations are made obvious by Kennan for providing a mixer with a variable load FET as claimed, for providing a stable mixer bias voltage.

For foregoing reason, the examiner believes that the pending claims are not allowable over the cited prior art.

### ***Conclusion***

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

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calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- **Klemmer** (US 6,211,708), Frequency doubling circuits, method, and systems including quadrature phase generation.
- **Roques et al** (US 5,151,669), Dual-gate FET attenuator controlled by a variable load circuit.
- **Richardson** (US 4,701,646), Direct coupled FET logic using a photodiode for biasing or level-shifting.
- **Christensen** (US 3,569,732), Inductance-less IGFET frequency doubler.
- **Hauer** (US 4,262,361), Variable bandwidth filtering and frequency converting system.

12. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

(703) 872-9314 (for formal communications intended for

entry)

(for informal or draft communications, please label "PROPOSED" or "DRAFT")

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Hand-delivered responses should be brought to Crystal Park II, 2121  
Crystal Drive, Arlington VA, Sixth Floor (Receptionist).

Any inquiry concerning this communication or communications from the  
examiner should be directed to Duc M. Nguyen whose telephone number is (703)  
306-4531, Monday-Thursday (9:00 AM - 5:00 PM). Or to Edward Urban  
(Supervisor) whose telephone number is (703) 305-4385.

Any inquiry of a general nature or relating to the status of this application  
should be directed to the Group receptionist whose telephone number is (703)  
305-4700.

Duc M. Nguyen

Jan 22, 2005

A handwritten signature in black ink, appearing to read 'Duc M. Nguyen', written over the printed name.